

REMARKS

Applicants' representative wishes to thank Examiner Leo for the courtesy extended during the interview conducted on May 21, 2002. A separate record of the substance of certain aspects of this interview is included in the following remarks, although the record provided by the Examiner on the Interview Summary appears complete.

Upon entry of this Reply, claims 22, 31-35, and 38 will remain in this application.

Claims 22 was rejected, along with dependent claims 31 and 38, as being unpatentable over U.S. Patent 5,803,162 to Karbach et al. in view of U.S. Patent 4,262,659 to Brzezinski and U.S. Patent 4,546,825 to Melnyk et al. Dependent claims 33-35 were also rejected based upon these references and further in view of an additionally applied secondary reference. For reasons discussed during the interview and reiterated here, reconsideration is requested.

It is respectfully submitted that no possible combination of the Karbach et al., Brzezinski and Melnyk et al. patents relied on would result in a heat exchanger manufacturing method comprising the particular "providing", "arranging" and "welding" operations required by claim 22 as amended above. As noted during the interview, the Karbach et al. heat exchanger does not have a plurality of rectangular tubes for guiding exhaust gas. The Karbach et al. patent discloses disc-shaped heat exchange elements in which turbulence inserts are arranged, and the use of rectangular tubes is neither disclosed nor suggested by the Karbach et al. patent.

The Brzezinski patent does not disclose a heat-exchanger, i.e. a device which allows the exchange of energy (heat) between two fluids. Instead, the Brzezinski patent concerns a solar radiation absorbing panel and, as such, is not related to the art of manufacturing a heat exchanger for cooling internal combustion engine exhaust gas. Further, as noted during the interview, the Brzezinski patent does not disclose lugs that are either directly attached to tubes or integrally formed from walls of tubes. The Brzezinski patent does not disclose any tube at all; instead, the Brzezinski patent discloses a box-like housing 3. The housing has a sheet 8 of glass or the like which forms an upper surface. A base sheet 9 of absorptive material is located within the housing. Tab members 15 and 16 are cut out of the base sheet 9 and bent into the housing 3. The Brzezinski patent does not disclose that these tab members 15 and 16 might be welded directly to tube walls. The embodiment forming the subject matter of the patent application referred to in lines 48-64 in column 1 of the Brzezinski patent has a construction which is unknown; it is not at all clear whether the "fins" welded to the absorptive plate referred to are either tab members such as elements 15 and 16 of Brzezinski or lugs such as those of the present invention.

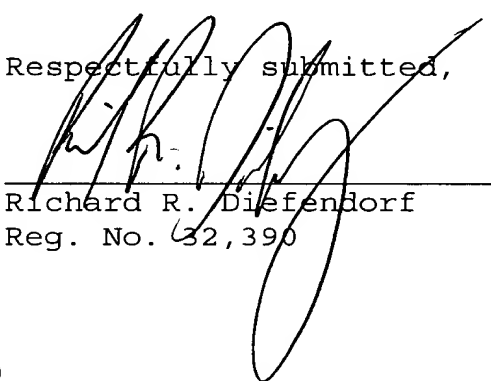
Finally, the Melnyk et al. patent discloses a heat exchanger having latticed tube bottoms 24 for a plurality of cylindrical tubes. However, the Melnyk et al. tubes are brazed to bottoms as set forth in column 2, lines 41 to 45 whereas claim 22 of the present application requires that ends of the tubes be welded to the latticed tube bottoms.

It is respectfully submitted that claim 22 as amended above is patentable. The dependent claims remaining in this application are patentable as well. All claims remaining in this case, therefore, are now patentable.

This application is now in condition for allowance. Should the Examiner have any questions after considering this Reply, the Examiner invited to telephone the undersigned attorney.

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Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claim appearing below, additions are underlined.

There are no deletions.

22. (Four times amended) A method of manufacturing a heat exchanger for cooling exhaust gas of an internal-combustion engine, said method comprising the steps of:

providing a plurality of rectangular tubes for guiding exhaust gas;

arranging a plurality of lugs in said rectangular tubes diagonally to a flow direction of the exhaust gas, in pairs, by one of (a) directly attaching the lugs to opposite walls of said tubes and (b) integrally forming the lugs from said opposite walls of said tubes;

providing first and second latticed tube bottoms;

welding ends of said rectangular tubes to said latticed tube bottoms such that said rectangular tubes form a bundle;

attaching a sheet metal jacket to said tube bottoms and around said bundle;

providing said sheet metal jacket with a coolant inlet and a coolant outlet to allow a liquid coolant to flow around said rectangular tubes in said sheet metal jacket; and

attaching connections to said tube bottoms, to ends of said sheet metal jacket, or to both said tube bottoms and ends of said sheet metal jacket, said connections being configured for attachment to an exhaust pipe communicated with the exhaust gas from the internal-combustion engine, each said

connection defining a central opening for communicating said rectangular tubes with the exhaust pipe.